

Prince, (D.)

CONSIDERATIONS IN RELATION TO DISEASES OF THE JOINTS.

BY DAVID PRINCE, M. D.

[Reprinted from the *American Practitioner* for February, 1877.]

It is a question why a sprain of a joint disappears in a few days in one person in one condition; and in another person, or in another condition, the acute affection sets in operation a train of diseased action which continues for years. What is the condition upon which this difference depends? It is difficult to find an explanation, except in a general or constitutional state, in the "*vis medicatrix nature*."

The general condition adequate to make the difference, in the course of a local disease, tending in one case to speedy recovery, and in another to protracted morbid changes, may be inherited and permanent, acquired and permanent, or acquired and temporary. The treatment of local diseases in the latter condition affords the most brilliant results from remedies directed to the temporary general condition, without which no local treatment can be of any avail. Knowledge in this direction is especially requisite in the treatment of chronic joint diseases. If a patient should be attacked by boils, ripening like cotton one after another, and coming in different localities, he would be a silly man who should think to cure the disease by local remedies. So, if bone and joint diseases arise one after another in different parts, a fact familiar to every observer, he would be equally silly who should fail to see nothing but local causes in the manifestations distant from each other.

In disease of hard bone, attended by the arrest of its circulation to the extent of necrosis, the resulting sequestrum becomes a dead or foreign body, keeping up a diseased action which is independent of a general dyscrasia; and in this condition, the removal of the foreign body leads to a speedy



cure. If, however, the general condition favorable to the local disease remains, there may be a continuance of local disease, and the surgeon may wonder at his disappointment.

A necrosis of the spongy bones occurs less frequently, because there is room for the expansion of the more numerous vessels, and nutrition is less dependent upon the superficial periosteal supply. It is on this account that the disease more often results in chronic inflammation than in necrosis.

The classification of joint diseases has not been improved since Brodie wrote his book on "*Diseases of the Joints.*"

First. Diseases commencing in the synovial membrane, resulting in swelling, effusion, or ulceration; running a simple course, or extending to adjacent parts. The very convenient word *synovitis* had not been introduced in Brodie's time.

Second. Diseases commencing in the ligamentous and cartilaginous structures, painless from the absence of nerves of sensation, but attended with sympathetic pain and spasm. From the absence of pain, and the hidden position of the diseased tissues, very considerable destruction of the overlying synovial membrane, and the extension of the disease to the underlying bone, exposing its nerves, which acquire the sensitiveness characteristic of osseous inflammation, must occur before the case is taken to be serious. No convenient *itis* has been invented for this.

Third. Diseases commencing in the bone, resulting in gradual swelling; the formation of an abscess, or of hyper-nutrition generally invading the joint, but sometimes not. The difference in symptoms between rapid and slow progress is as great here as in other parts. The slow cases of "white swelling" result in a shape of joint reminding one of dumb-bells placed together, with big extremities and attenuated shanks. This disease may remain confined to its original seat in the bone, or extend to the joint, with ulcerative or suppurative inflammation, or the exudation of gelatinous synovia, which has no great tendency to suppurative metamorphosis; elastic or fluctuating and tempting to the bistoury, but non-responsive to its introduction.

Several diseases, or kinds of disease, may be included in each of the three divisions of the classification. The classification itself is chiefly useful in aiding the conception of the subject. The diseases so run into each other in their progress, that it may not be easy or important to determine the seat of the disease in its beginning. The special mechanical indication, to avoid the contact and friction of adjacent parts, is the same in all. This is an appreciation which has been attained since the time of Brodie, and which has done more to lessen

the severity and shorten the duration of joint diseases, than all other things put together.

The brilliancy of this innovation in the treatment of diseases of joints—for the practical realization of which we are indebted to the use of adhesive plaster for extension, and to the mechanical genius of Henry G. Taylor—has diverted attention from the lesson which the older living members of the profession learned from the reading of Abernethy “On the Constitutional Origin of Local Diseases.” There is a temptation in those who practice a specialty to take a view of local diseases altogether too narrow, and surgery is not exempt from the tendency. An operation or an apparatus is expected to stop the progress of a disease, which owes its origin and continuance in great part to causes inherent in the vital condition of the general system, of which the local disease is a manifestation, or to the local condition of a distant part, of which the disease in hand is a sympathetic effect.

An instructive example of this constitutional tendency was seen by the writer last August, in the “Hospital for the Ruptured and Crippled” in New York City. The case was that of a child about eleven years old, on whom Dr. Lewis A. Sayre is said to have made the operation for excision of the head of the femur about four years ago. At the time of observation in August, 1876, several open sinuses occupied the seat of the incision; several other ostitic and subperiostitic suppurative inflammations had developed themselves since this surgical procedure. The case is the more significant because the distinguished surgeon referred to, together with Dr. Louis Bauer, formerly of Brooklyn and more recently of St. Louis, have done more than all others together in this country, to give prominence to excision as a remedy in joint diseases. They have gone farther, and attempted to depreciate the importance of the constitutional element in the natural history of the disease.

The writer has now under observation a case in which there is gelatinous exudation in both knee-joints, nearly absorbed in the left and in progress of absorption in the right, with bony enlargement of the epiphysis, showing involvement of bone in the morbid action; subperiosteal inflammation resulting in bony exfoliation above the right knee; a similar condition of the lower anterior portion of the tibia on both sides; a recovered disease of the right ankle-joint; an exfoliating necrosis of the humerus on both sides, near the upper extremities; a similar condition of the upper portion of the sternum, and of the crest of the left ilium. A year ago the tibia was flexed to an acute angle with the femur on both sides, a condition

which has been gradually but completely removed by weights and pulleys. The constitutional condition in this case was very low a year ago, at the time of the beginning of the treatment, which has been both mechanical and constitutional. At present the general health appears to have been completely restored, and the local tendencies are upward in accordance with the general condition.

The practice of excision in such cases must lead to disappointment, unless the general tendency is changed. If this change of general tendency is secured, the osseous, cartilaginous and synovial inflammations gradually subside, and the form of the joint assumes its natural shape. If suppuration, pressure, and ulcerative absorption have resulted in openings with the exterior, the condition gradually ameliorates, and with more or less deformity or restraint of movement, the joint ceases to have any active pathological condition. If minute portions of bone have become necrosed, they become detached and float away in the stream of pus. When, however, there comes to lie in a joint a distinct detached portion of spongy bone of such size as not readily to flow away with the purulent discharge, then the rule of practice applicable to hard bone applies equally to the soft. In necrosis of hard bone, it is the rule to wait until the dead has become detached from the living, so that it can be lifted away. No one thinks of chiseling off an exfoliation, or chiseling out a sequestrum, which is still in continuity with the living bone. If a necrosis of spongy bone is no surgical exception, the excision should be postponed until the continuity of the dead with the living has clearly ceased. Then it is clearly no excision, but an extraction of what has become a foreign body.

There may arise cases in which, after the constitutional condition has taken the upward tendency, the removal of the diseased extremities of the bones involved, may shorten the time of the recovery. If, however, the favorable turn has taken place with the locally diseased parts not removed, the practitioner is warranted in seeing what further can be done by his therapeutics, so that with more time he may save, instead of sacrificing, a joint. If, on the other hand, there is no upward change in the constitutional condition which originally caused the disease, or if caused by an injury, favored its progress downward into the chronic state, the remaining portions of bone are likely to become carious or necrosed, and in such a condition the patient, like the one referred to in the "Hospital for the Ruptured and Crippled," will be no better for the proceeding, with the risk of dying soon after the

operation, from some of the many accidents attending large wounds.

The rule arrived at by this presentation of the subject is not applicable to the question of making free incisions into joints which are already open, or which contain pus which has passed to the condition of putrefaction. An unimpeded discharge diminishes the local irritation, and the free openings make it possible to wash away the putrefactive material and to apply antiseptic dressings. The question whether or not the contents of a swollen joint are putrid may be safely determined by the aspirating needle, which may at the same time diminish the internal pressure by loosening the amount of the fluid. It is well, in this proceeding, to dip the needle into melted carbolic acid in order that any germs of putrefaction adhering to the needle may be destroyed, and to cover the places of puncture after the withdrawal of the needle with isinglass plaster, which, when a little dried, may be smeared with carbolized oil.

If it is found that the contents—whether pus, serum, or gelatinous exudation—are not putrid, it is not easy to see any reason for an incision, much less an excision. The fluid serves the mechanical end of keeping the articular surfaces asunder, and of thus answering one of the purposes of extension, without in any possible way being a source of local irritation. Nothing can be a softer cushion for surfaces which are rough and inflamed to a high degree of sensibility, than either of the kinds of fluid which are exuded into the cavity of a diseased joint. An amount of fluid sufficient to produce painful distension may be diminished by aspiration, but a complete evacuation would be a blunder.

Joint diseases do not differ from other local diseases in the demand for rest, relative or absolute; and whether relative or absolute, depends upon the question of the possibility of securing the relative without the absolute. When any vibration of a diseased part is immediately attended by pain, the patient will himself restrain his general movements, and resist the injudicious interference of others. When, however, the pain comes some time afterward, a patient will rarely reason out the connection between the two. If unrestrained, he will exercise as long as he likes, and fail to attribute his subsequent sufferings to the indulgence in motion.

It is here that the medical adviser has to contend against not only the inclinations of the patient and the friends, but against a medical sentiment that has been recently worked up by parties who are interested in the sale of apparatus. The mischief which follows the dependence upon a “portable

splint" is irretrievable in the double sense of permanently impairing the patient's healthy form, and impairing the practitioner's reputation.

It is urged everywhere that the patient must have exercise in the open air to keep his health up; and because walking and riding in a carriage are not sufficiently painful to suppress the patient's enjoyment of the pastime, neither he nor his friends are likely to attribute the suffering of the following night to its true cause.

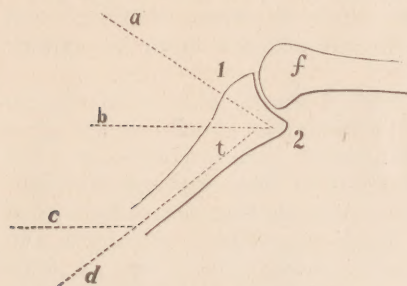
To those who know, it is evident enough that the pain, the sleeplessness, and the opiates, do vastly more mischief than the open air exercise can do good. That the patient and friends never appreciate the exemption from the terrible symptoms of protracted joint diseases which comes from the early enforcement of absolute rest, may be overbalanced in the mind of the practitioner, by his own escape from attendance upon a case in which he must appear almost helpless in the presence of the suffering patient and his anxious friends. It requires intelligence, personal force, and great watchfulness, to secure the efficient observance of enforced rest; and one who can not succeed, either from his own defect or the opposition of patient and friends, will generally come out with the best reputation by retiring from the case. In the acute stage of a joint disease, the enforcement of absolute rest is free from disaster; and, in most of the cases which are not wholly constitutional in their origin, the case will terminate "by resolution."

The wrist and elbow-joints can be surrounded by splints, so as to secure absolute local rest while the patient moves about; but the joint of the shoulder, and those of the spine and the inferior extremities, can only be partially restrained by apparatus. Lying in bed is the rational remedy. It must be remembered that the advantage of exercise in the open air is relative, and may, therefore, be injurious when inseparable from those vibrations and movements which aggravate the local disease.

The portable apparatus permitting motion is for a later period, when the case is in the stage of recovery, and when it is desired to prevent the consolidation of exudations and adhesions. For the hip, knee and ankle, it is desirable that the splint should extend below the foot, so as to receive the whole weight of the body. The latest modifications by Dr. C. F. Taylor, of New York, answer the purpose.

It is not in the plan of this paper to speak of the correction of deformities, but a hint may be given with regard to the direction of extension when a deformity exists. The exten-

sion should be so applied that one of the internodes is not converted into a lever, by which a portion of its joint surface is caused to press upon the corresponding joint surface of its adjacent internode. The

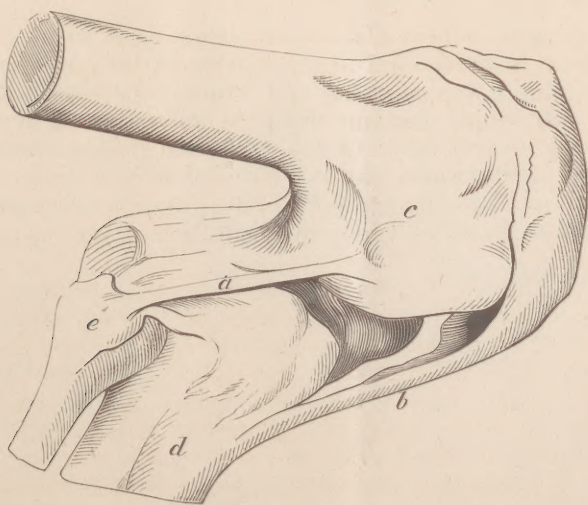


accompanying diagram illustrates the point. Let the bone *t* be flexed upon the bone *f*, and retained by the changes and products of inflammation, so that one joint surface will not readily glide upon the other; and let it be attempted to overcome the

pressure of one surface upon the other. The inspection of the diagram leads to the selection of *d* as the most advantageous direction for the relief of pressure; while the lines *a* and *b* are most advantageous for the relief of pressure and the correction of deformity. The direction *c*, as a line of extension, must increase the pressure at 1 as much as it is diminished at 2, and can only be attended with mischief.

This mechanical principle is applicable to all joints, and the neglect to observe it is the reason of most of the failures in the unsuccessful attempts to employ extension.

The accompanying cut, taken from Tamplin on Deformities, further illustrates the subject:



a External lateral ligament. *b* Ligamentum patellæ. *c* Femur.
d Tibia. *e* Fibula.

If the problem is to relieve the pressure of the articular surfaces in the progress of an inflammation of a joint, after a considerable displacement has occurred, or when there has come to be a fixedness in the flexed position, the force must be so applied as not to increase the pressure upon any surface whatever within the joint.

With regard to the treatment of the constitutional disease or diathesis—without which diathesis we should never see a chronic inflammation, independent of some parasitic or other foreign cause of irritation, introduced from without or originated within the system—it suffices to say that after the removal or the alleviation of the irritating cause which acts upon the general system to tax its nerve power, that mode of treatment is to be pursued which is best fitted to secure an appetite for food and its digestion. Nutrition is the *sine qua non* in the treatment of exhausting chronic diseases. This end is best secured by indirection. Let it be assumed that some obstruction is to be removed rather than that power is to be directly applied. There may not be any constipation, and yet a cathartic twice a week will do more to encourage appetite than all other means combined. Having cleared “the first passages,” tonics will be borne which would otherwise only produce fever and headache. The fluid extract of senna constitutes a convenient and efficient cathartic, and may be preceded, in cases in which there is an ordinary fullness of flesh, by a grain of calomel for a child, and a larger quantity for a greater age.

The syrup of iodide of iron, ten drops three times a day for children, intercalated with the citrate of iron and quinia, so that a child gets two grains three times a day, are favorite tonics. The employment of iodide of potassium, in doses of ten to sixty grains three times a day, often strikes some hidden cause of dyscrasia; but if continued long without interruption, it destroys the appetite. An ultimate, not a speedy, restoration is the rational aim of treatment.